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2013 Lake Martin Vegetation Control Plan

LDWF, Inland Fisheries

Lake Martin, also known as Lake La Pointe, is an 800 acre impoundment just five miles south of Breaux Bridge, Louisiana. Lake Martin was formed in 1952 by constructing a levee around an existing lake. Water enters the lake naturally only by rainfall and when high water in the Ruth Canal overflows the levees. This shallow waterbody encompasses 800 acres with approximately 200 acres of open water area. The remaining area is composed of cypress-tupelo swamp with thick growths of willow and button bush.

WATERBODY INFORMATION

Waterbody type – Impoundment - The levee encircles an area approximately 800 acres. Most of this area, 580 acres, is flooded timber which consists of cypress, willow trees and button bush, with remaining 200 acres being open water. The open water portion is about 5 feet deep along the tree line gradually deepening to about 8 feet toward the center. The flooded timber has water ranging in depth from a few inches to about 5 feet. There is a borrow canal around the inside periphery of the lake. This canal is very shallow in some areas, but up to 12 feet deep in others. There is a series of boat lanes through the flooded woods. These were cleared in the late 1970's and early 1980's. The boat lanes are about 4.5 feet deep. Also numerous stumps, logs and submerged vegetation make up the rest of the lake's complex cover.

1. Age and condition of control structures – Good condition
   In 1993 a 45-foot spillway set at a height of 10.5 feet MSL was installed on the north levee to reduce hydraulic pressure on the low sections. Pipe gates were installed on the levee crown to prevent vehicular traffic on the unimproved section of levee. Another water control structure was put in place in late 2001 on the southeast end of the lake. The structure is 70 feet long with a 48 inch diameter polymer coated galvanized corrugated steel pipe connected to a 96 inch diameter full round polymer coated corrugated steel pipe 6 feet tall with a 48 inch diameter entry pipe of the same material 3 feet long equipment with a beaver guard. The 96 inch pipe has channel iron welded inside to receive two 4 foot wide rows of stop logs. The idea behind the structure is to release the main pool of nutrients, near a large bird rookery (400 acres), into the adjacent 6,400 acre Bayou Tortue Swamp, largely owned by The Nature Conservancy. The rookery is a shallow (2-3 feet in depth) area with thick button bush, tupelo, and cypress trees that make up the habitat along with floating and submerged aquatic vegetation.
2. Type of control structure – there is a 45 foot spillway with one 4 foot gate (see picture below)
3. Water level range (MSL) – 10.5' MSL at pool stage
4. Surface area range – 800 acres at pool stage
5. Average depth – 4-5 feet
6. Watershed: Zero
7. Drawdown potential of structure – Gate open completely can drop the lake one inch per day reducing the lake 4-5 feet below pool stage.
8. Waterbody Board or Lake Commission – St. Martin-Lafayette Game and Fish

Commission (no longer in service, see below)

a. Creation / Nomination – created by act 337 of the Legislature of Louisiana for the year 1950. Abolished by Statues 36:610 and the responsibility for management of preserve transferred to the Department of Wildlife & Fisheries.
b. Primary contact information – Louisiana Department of Wildlife and Fisheries, Opelousas, LA (337) 948-0255
c. Procedure for spillway openings – LDWF owns, operates and maintains the control structure on the north end of the lake. The control structure on the south end of the lake (Bird Rookery) is owned by The Nature Conservancy. Recommendations go from LDWF to St. Martin parish officials and landowners, and then if approved it is opened by LDWF.

DRAWDOWN HISTORY

Lake Martin has historically had aquatic vegetation problems that have severely restricted boating and angler access. A drawdown was conducted in 1963 in an effort to combat the problem. This first drawdown was ineffective because water was unable to drain properly due to a poor drainage system. Other drawdowns continued but with little success. In 1977, plans to alleviate these problems included construction of a drawdown structure, refurbishing the pump station and the dredging of a central drainage canal. Theses improvements were completed in 1981 with the refilling of the lake. However, vegetation problems developed a year later, reducing access and causing dissolved oxygen reductions and resulting fish kills. In 2001, another control structure was constructed on the southeast end of the lake where the rookery exists. The idea behind the structure is to release excess nutrients into the adjacent 6,400 acre Bayou Tortue Swamp. After construction, fall/winter drawdowns were conducted from 2002 – 2006 to improve water quality conditions.

Drawdown dates

There have been a total of 15 drawdowns for control of submerged aquatic vegetation. Drawdowns were all conducted from September – December (Fall/Winter).

DRAWDOWN HISTORY				
Date Opened	Date Closed	Purpose	Results	Issues
Fall 1963	Winter 1963	Control native submerged vegetation	Fair	Lake lowered 2-3 ft.
Fall 1965	Winter 1965	Control native submerged vegetation	Fair	Lake lowered 2-3 ft.
September 1968	October 1968	Control native submerged vegetation	Fair	Lake lowered 2-3 ft.
September 1970	October 1970	Control native submerged vegetation	Fair	Lake lowered 2- 3 ft.
September 1972	November 1972	Spillway reconstruction	Good	Lake lowered 4-5 ft.
September 1974	October 1974	Control native submerged vegetation	Fair	Lake lowered 2 ft.
September 1977	October 1981	Spillway reconstruction	Good	Lake lowered 4-5 ft.
September 1984	October 1984	Control native submerged vegetation	Fair	Lake lowered 3 ft.
September 1986	October 1986	Control native submerged vegetation	Fair	Lake lowered 2-3 ft.
September 2002	October 2002	Improve water quality	Fair	Lake lowered 2-3 ft.
September 2003	October 2003	Improve water quality	Fair	Lake lowered 2-3 ft.
September 2004	November 2004	Improve water quality	Good	Lake lowered 2-3 ft.
September 2005	October 2005	Improve water quality	Good	Lake lowered 2-3 ft.
September 2006	October 2006	Improve water quality	Good	Lake lowered 2-3 ft.
September 2008	October 2008	Build board walk in rookery	Good	Lake lowered 2-3 ft.

As the table above shows, drawdowns have been a frequently used tool in the management of Lake Martin aquatic vegetation. From 1963 – 1986, native vegetation such as coontail and fanwort were the primary species targeted for control. In 1993, Hydrilla was discovered. In 1997 and 1998, herbicide applications and triploid grass carp stockings were used to control this invasive species (see Past Control Measures section).

Stakeholders

Only use is for recreational activities (fishing & hunting)

Controversial Issues

In 1993, Hydrilla was discovered in Lake Martin. Hydrilla became a serious problem for boating, fishing and hunting, as it encompassed approximately 80% of the lake. The Lake Martin Advisory Council, which was abandoned in 2002, as well as users of the lake had some concerns if LDWF was able to control the spread of Hydrilla. In 1997 and 1998 herbicide applications and stocking triploid grass carp were used to control the spread of this invasive species.

Complaints are few. Aquatic vegetation is under control for now.

Aquatic Vegetation Status:

Hydrilla has been kept under control since the grass carp/herbicide applications in 1997-1998 occurred. No Hydrilla was observed in the Lake Martin type-maps, conducted in July 2010 and 2011. **(See Type Maps Below)**

In September of 2012, coontail and fanwort covered 10% of the lake, approximately 80 acres. Other plants include lotus, alligator weed, common salvinia, water hyacinth, and duckweed comprised only a small portion of plant coverage. Of these plants, lotus covered 15 acres, alligator weed and duckweed covered 8 acres, water hyacinth covered 10 acres, and common salvinia covers 50 acres. Spray crews will use contact herbicides to control the spread of this plant.

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Plant growth projections for 2013:

Hydrilla – none
Coontail and Fanwort – remain at 10% at 80 acres
Common salvinia – up to 70 acres in the southeast end of the lake (in the rookery)
American Lotus, Alligator-weed, water hyacinth and duckweed – light coverage throughout the lake (5%).

There have been no efforts to re-establish native plant species in Lake Martin.

Limitations:

The only limitations are applying herbicides in the rookery area (southeast end of the lake). The Nature Conservancy owns this portion of the lake and asked LDWF not to spray during the bird breeding season from February to June.

Since this relatively small lake is often visited by many user groups, our spray crews have to be careful while applying herbicide and often begin work very early in the morning so not to interfere with these visitors.

Past Control Measures -

Lake Martin was drawn down for extended periods of time from the mid-1970's until 1981 due to the abundance of aquatic vegetation and flooding. A plan to renovate the lake began during this time. Boat lanes were cut through the timber on the northern and western portions of the lake and a central channel was dug to facilitate future drawdowns. The existing pump and drawdown structure were also refurbished during this time. The work began in 1977 with the draining of the lake. The work was completed and the lake refilled in 1981-1982. In 1984, two culverts under the east and southeast levee were removed.

In 1993, the lake was drawn down approximately two feet, and 3,600 feet of levee on the north and northwest side were raised to a level equivalent to the lowest point of the levee on the Rookery Road section (southeastern). A 45-foot spillway set at a height of 10.5 feet MSL was installed on the north levee to reduce hydraulic pressure on the low sections. Pipe gates were installed on the levee crown to prevent vehicular traffic on the unimproved section of levee.

Hydrilla was discovered in Lake Martin in 1993. It soon became a serious problem for boating, fishing and hunting. Hydrilla encompassed approximately 80% of the lake. In 1997 and 1998, a regimen of herbicide applications and grass carp stocking was implemented. The herbicide application was made by a fixed winged aircraft operated by Aerial Crop Care based in Port Barre, La. The herbicide Aquathol was applied in liquid and granular form. In April of 1997, 700 gallons of Aquathol K was applied to treat 200 acres and 1,600 triploid grass carp were stocked in October of that year. In April of 1998, another 200 acres were treated using 680 pounds of Aquathol Super K granular and 2,400 triploid grass carp were stocked in September of that year.

Over extended periods of time, water quality has suffered due to nitrogen inputs from the extensive bird rookery on the south end of the lake and the impoundment of water by the levees. The high nutrient levels have encouraged excessive growth of aquatic vegetation, resulting in a depletion of oxygen for the water column. A water control structure was put in place in late 2001 on the southeast end of the lake. The idea behind the structure is to release the main pool of nutrients, near the rookery, into the adjacent 6,400 acre Bayou Tortue Swamp, largely owned by The Nature Conservancy. Here, the exiting swamp vegetation will take up the nutrients.

With the new structure in place, partial drawdowns of 2-3 feet were implemented to improve water quality conditions. Drawdowns were conducted in 2002, 2003, 2004, 2005 and 2006. Each year the structure was opened near the middle of September and full replacement of the water was achieved no later than January 31st of the following year. To accomplish this, water was pumped in from the Ruth Canal, which skirts the north end of the lake.

In 2012, foliar herbicide applications were made on nuisance plants such as water hyacinth, American lotus, alligator weed, primrose, and common salvinia in Lake Martin.

A total of 68 gallons were applied to 147 acres. To control water hyacinth, alligator weed, primrose and American lotus, 2,4-D was applied at a rate of 0.5 gallons per acre. Diquat was applied at 0.75 gallons per acre to control common salvinia.

Recommendations for 2013:

At present, aquatic plants, especially submerged plants, are under control. Regular aquatic vegetative assessments will occur throughout the year during scheduled type maps and standardized sampling in the lake. Therefore, no drawdowns are recommended at this time.

Foliar herbicide applications will be made on nuisance plants, such as water hyacinth, lotus and common salvinia, in areas that are used by the public. To control water hyacinth and lotus, 2,4-D will be applied at a rate of 0.5 gallons per acre and diquat and Aquamaster will be used at 0.75 gallons per acre to control common salvinia. These herbicides will be applied as needed.

Type maps

Lake Martin Vegetation survey 7 28 2010

A survey of the present aquatic vegetation was conducted on lake Martin on 7 28 2010. At that time, no submerged vegetation was observed. Light amounts of Eichhornia crassipes were seen occupying the lake shoreline with slightly heavier amount observed along the western shoreline. Small patches of Eichhornia crassipes were seen floating in the middle of the lake. Moderate to heavy amounts of Salvinia minima were observed in the wooded southern end of the lake along with light patches of Carex spp.. Small amounts of this vegetation were also seen along the northwest shoreline. All in all, aquatic vegetation amounts were light throughout the open water area of the lake. The wooded area of the southern portion of the lake appeared to contain lighter than usual amounts of floating vegetation. Lake water quality was very good with dissolved oxygen levels above 4.0 mg/l throughout the open water area of the lake. Water level was 9.8 ft and the shallow areas above the spoil ridges on the northern end of the lake were free of vegetation.

Gillnetting in the early winter of 2009 captured 33 grass carp all over 3 feet total length.

Lake Martin Vegetation Survey

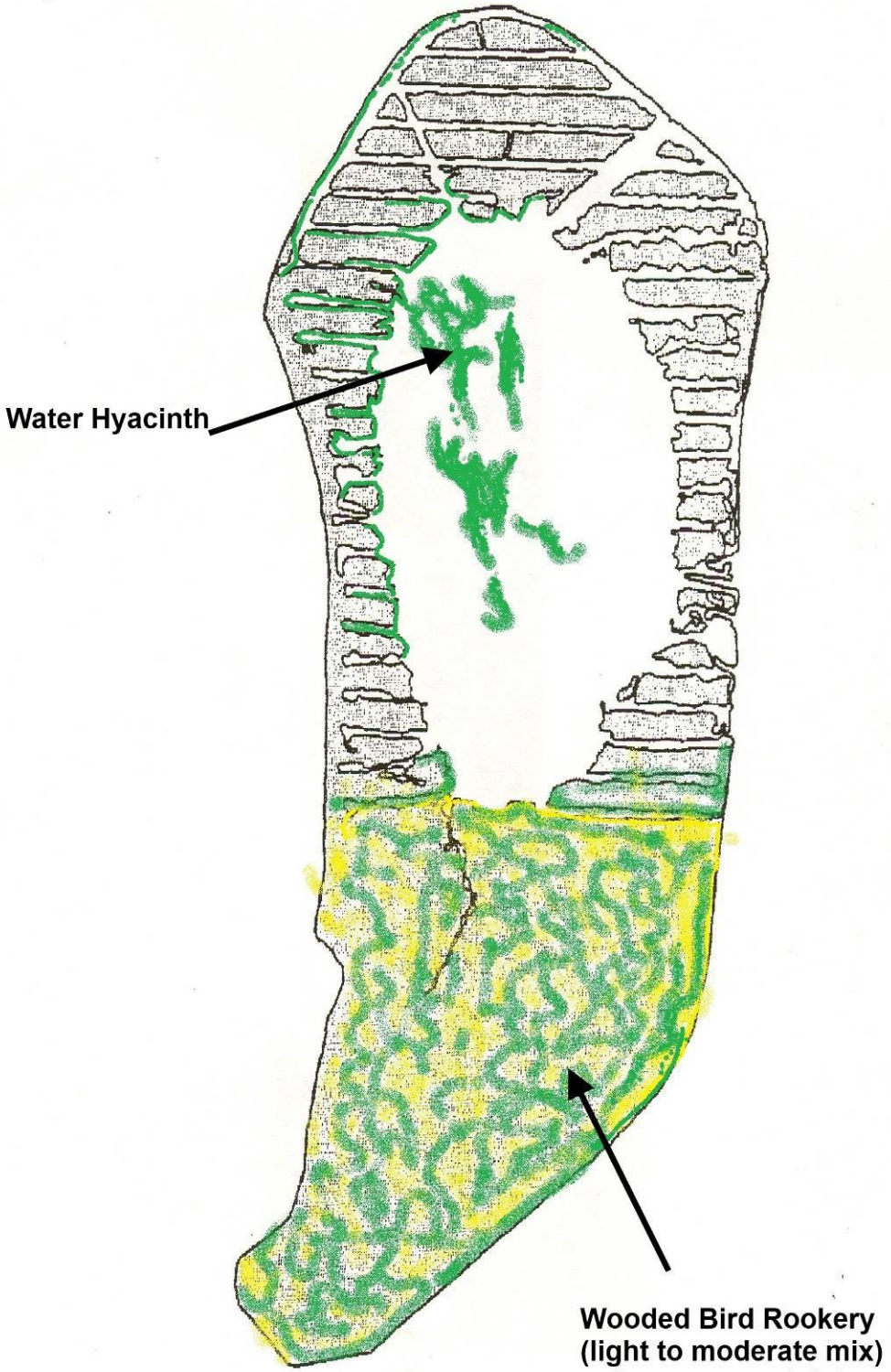
7/28/11

Martin Plonsky, Dist 6 Inland Fisheries

Lake Martin continues to have a moderate amount of common salvinia (*Salvinia minima*) with the greatest concentration found in the southern third of the lake known as the bird rookery. This area of the lake is shallow with an average depth of 2 to 2.5 feet and is thickly vegetated with buttonbush (*Cephalanthus occidentalis*) and bald cypress (*Taxodium distichum)* . Mats of sedge (Carex sp.) and water *primrose (*Ludwigia spp.) are also doing well within the bird rookery area of the lake. Attempts to control and reduce the common salvinia found in the rookery using diquat dibromide have been made with limited success due to the arduous circumstance with regard to the advantageous operation of utilized herbicide spray equipment within the rookery area. Salvinia is beginning to spread to the open areas of the lake north of the rookery. Would the rookery be a suitable location for the stocking of common salvinia weevil (*Cyrtobagous salviniae)?*

To the north of the rookery area, the open water area of the lake remains mostly free of floating vegetation with only slight amounts of water hyacinth (E. crassipes) observed on the lake's northern areas. The entire lake remains free of any submerged vegetation with the stocked grass carp (*Ctenopharyngodon idella*) population continuing to thrive. A few small patches of water lily (N. odorata) are observed along the border between the rookery and open lake areas. Very slight amounts of alligator weed (A. philoxeroides) can be seen along the open northern lake end banks as well as more moderate amounts in the rookery area.

Lake Martin Vegetation Survey 7 28 2011
Severe infestation = RED
Moderate = YELLOW
Slight = GREEN



Aquatic vegetative mapping has been conducted since 1985. Years in which sampling occurred include: 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 2003, 2004, 2005 and 2010.

Lake Martin map of drain pipes, spillway, and boat ramp

Located on Southeast end of Lake

Located on Northeast end of lake (spillway)